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MusLib: A proposed database for the management of a music library

Gary St. Germain

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A Project
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the requirements for the Degree
Master of Arts
in
Special Major

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by
Gary St.Germain
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Approved by:

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Abstract

The music library of the San Bernardino City Unified School District houses approximately 20,000 sets of music and 1000 instruments. Information about each piece of music is stored in a card catalog of 3 x 5 cards. When music or instruments are checked out for use by the music staff, this information is also manually recorded onto file cards. This system is inefficient, error-prone and frustrating for teachers using the library. MusLib is a computerized relational database design which will solve tracking problems, inventory control and end user frustration.

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Introduction, Problem Background and Statement of Purpose

The purpose of this project was to design a database and determine if the benefits and advantages of a computerized system justify its cost. Database MusLib is a proposed database design for use in the music library of the San Bernardino City Unified School District. The music library houses approximately 20,000 or more sets of vocal and instrumental music which can be checked out for student usage by the music staff. Currently, information about the music is stored on 3 x 5 file cards. The music library is also responsible for maintaining an inventory of roughly 1000 instruments and 200 pianos. Information on these items is maintained on 5 x 7 file cards (see examples in appendix A).

Figures concerning inventory are estimates. Because most inventory information is maintained manually, accurate counts are virtually impossible. Some information concerning instrument inventory is filed in the district Data Processing department. When an instrument is purchased, it is given a district ID number and entered into the master inventory list of the entire school district. It is then transferred to the Music Library where a file card is maintained. However, because an instrument may be in use for ten years or more (usually much more), and at more than one school site, information from Data Processing is often outdated. The rare inventory reports which come from Data Processing are usually generated in forms which are of little use to the end users in the music library.

The only records about sheet music which are maintained by the district are the original purchase orders which contain the original cost, title and name of the composer. These are kept in the Purchasing Department. Any other information is the responsibility of the music department.

Description of the Current System

Locating a piece of music involves finding the title in the card catalog, writing down the file number and searching the shelves to find the correct storage envelope. Many of the file cards do not have the difficulty level written on them, so if a teacher needs to determine if a particular piece of music is suitable for his group, he or she must hunt through the stacks to locate the piece and examine it. It is also not possible to tell from the file card if the music in question is in the library or checked out to another teacher. This involves looking through another set of check-out cards. Some pieces of music have duplicate numbers, wrong numbers, no numbers at all or are missing entirely. The music library has been moved to several different sites over the years and with each move, more and more music is misplaced. There are still many pieces of music still in boxes from the last move two years ago. Another move is planned within the next two years. As a result, the current music inventory is not accurate and is often a source of great frustration for the user. Since the system must be maintained by hand, it is error-prone and often incorrect.

When instruments are checked out by a teacher, the district identification number is written on a file card and stored under the teacher's name. Identification numbers are five to nine digits long and are embossed on a tag which is glued onto each instrument. These tags often fall off or are pulled off by the children. The manufacturer's serial number must then be used for identification, but this creates another tracking problem because the instrument file is maintained by the

district identification number, making it difficult to find information about the instrument. Three or four instruments are lost each year because of this problem. At an average price of $300 per instrument, this costs the district about $900 to $1200 a year in lost inventory. MusLib can solve this problem because the instrument file can be searched by the serial number, district number, or any other field in the instrument relation, making it easy to locate information for any instrument.

The current system was devised 20 years or more ago. Everyone involved with the initial design has retired, died or moved to a different position. Any manuals or notes concerning the policies and procedures of the system have long since been lost in several moves of the library.

Ease of maintenance is the only redeeming quality of the current system. It takes no specialized training for the music secretary or librarian to fill out and file the necessary 3 x 5 file cards. It is also easy for a user to locate a title in the alphabetical file catalog, but beyond that, the system is inefficient and frustrating for the user.

Proposed System Description

Interviews with members of the music staff were conducted at staff meetings which were attended by all music teachers and the music librarian. Informal interviews with individual staff members were also conducted. Various needs and problems were expressed and all have been addressed in the design of MusLib.

MusLib is designed to solve the tracking of music and instruments that are checked out to teachers. These items are currently checked in and out by file cards which are sometimes lost, misplaced or filed under the wrong name, resulting in confusion and lost inventory. MusLib will solve these problems through the use of a bar coding system. The bar codes, in conjunction with the computerized database, can greatly reduce data entry errors and improve the efficiency of the music library. Other benefits of this system include:

- fast and accurate entry and tracking of music and instruments;
- quick identification of what music and instruments are checked out to each teacher;
- easily generated up-to-date catalogs, indexes and inventory listings;
- rapid and precise inventory though the use of a bar code scanner;
- online catalog searches by keyword and keyword combination (Boolean logic);
- cost savings by lowering inventory losses.

There are a number of important factors to be considered in the design of MusLib. The foremost of these is ease of use. This was mentioned by every user interviewed. When asked at a staff meeting, only four out of twenty five music teachers considered themselves computer users capable of using a computerized system. Because the music librarian and the majority of the music staff are not computer users, the system must be as user-friendly as possible. For this reason a Macintosh is the computer of choice. Its non-threatening graphic user interface makes it easy to navigate through the operating system with the mouse and point-and-click icons.

If budget allows, the system could be expanded to include a second smaller and cheaper computer networked to the host computer. This expanded system could be used by the music secretary and a teacher simultaneously without disrupting each other. With this configuration, the system could be used as a general office computer for the music secretary and by the music staff for applications such as word processing and page layout projects for programs, letters to parents, etc.

Since a MIDI keyboard, amplifier and headphones are already installed in the library, the addition of a MIDI interface and appropriate software can create a music workstation for composition and notational transcription. Eight music teachers said they would use this system to create custom arrangements for their groups.

Through use, a set of band music will often be missing a part, such as bass clarinet or first trumpet. If a director wants to use this piece, he or she has to hand copy the part from the score. This is a tedious and time consuming chore. By playing the part into the computer from a MIDI keyboard, the teacher can produce a professional quality part in a short time.

Music directors occasionally have to transpose or re-arrange parts to make them playable by his or her group. A music workstation can make this task much easier and shorten the time needed to create custom parts.

Some proposed music software packages include Finale, a professional notation program and Vision, a powerful MIDI sequencing program.

Logical Design of the Database

Each teacher interviewed wanted to be able to generate a list of music appropriate for his / her grade level. The database is designed so that all necessary and pertinent data are contained in the tables. Included are such information such as titles, composers, ratings, voicings, etc. This information will allow the users maximum flexibility to search the database in many meaningful and useful ways.

A comparison of the Title and Composer file cards in Appendix B shows that there is no difference in the data contained on each card. The only difference is in the title heading of each card. MusLib will remove these data redundancies. Update anomalies have been removed and the design has been normalized to third normal form (3NF). Third normal form, also known as Boyce-Codd normal form, is a major goal in any database design. Figures 1, 2 and 3 are screen shots from the Macintosh using Reflex Plus by Borland. Figure 1 shows the tables (relations) used. A more detailed breakdown of the field descriptions can be found in the data dictionary (see appendix A). The underlined field names are key fields.

Links between the tables are illustrated in Figure 2. The field names which start with **To_** are used by Reflex Plus to establish links between tables. Figure 3 is a screen for the entry of instrumental music and is an example of a typical input screen that could be used with MusLib.

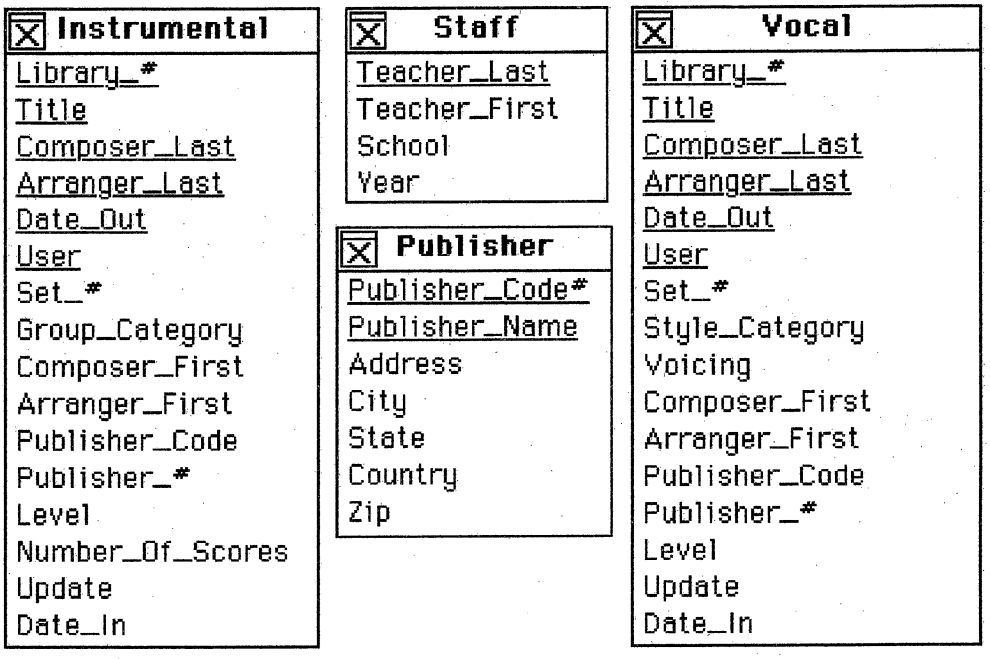

Fig. 1. MusLib Tables for sheet music.

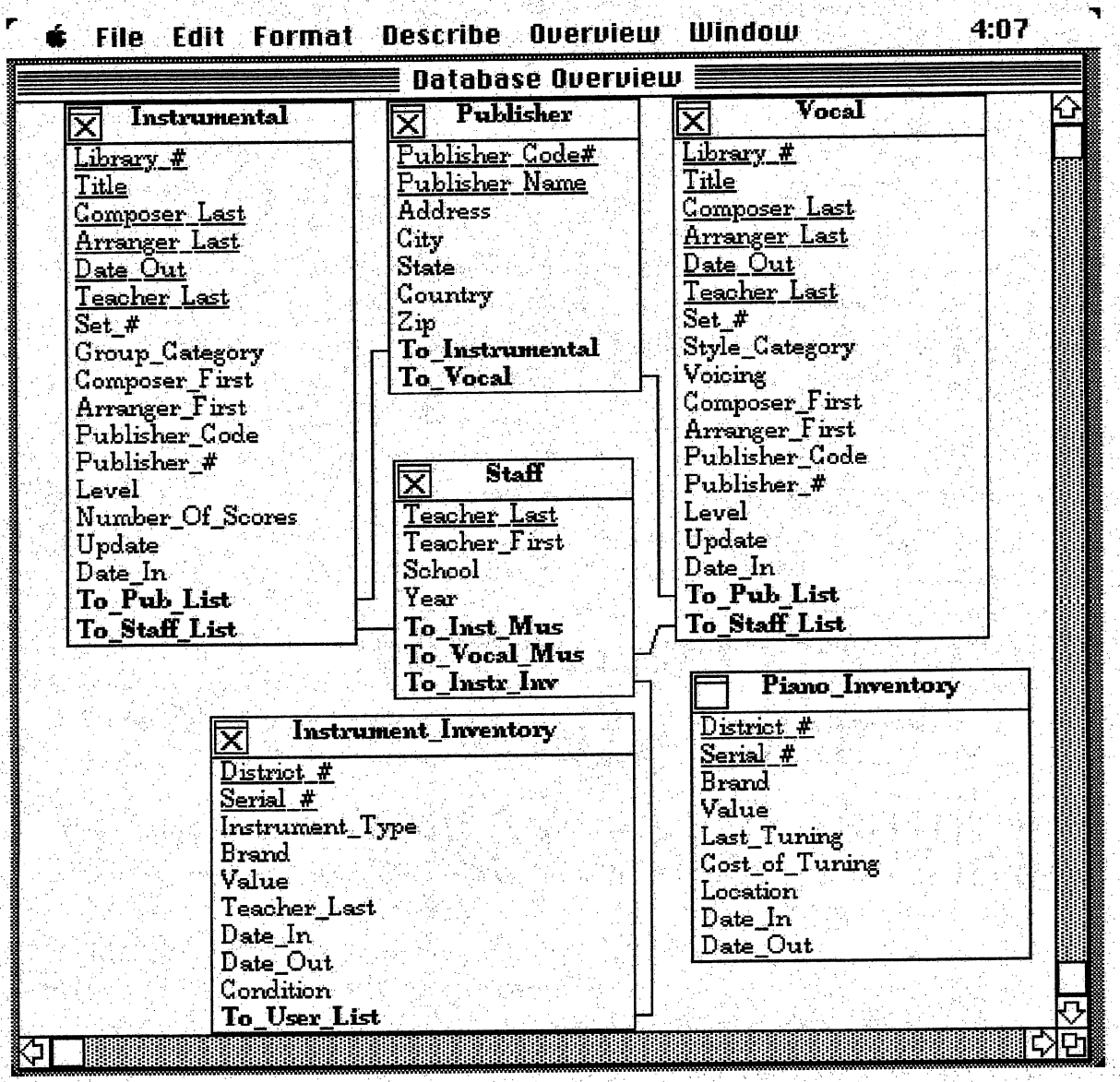

Figure 2. Links between the tables including instrument tables.

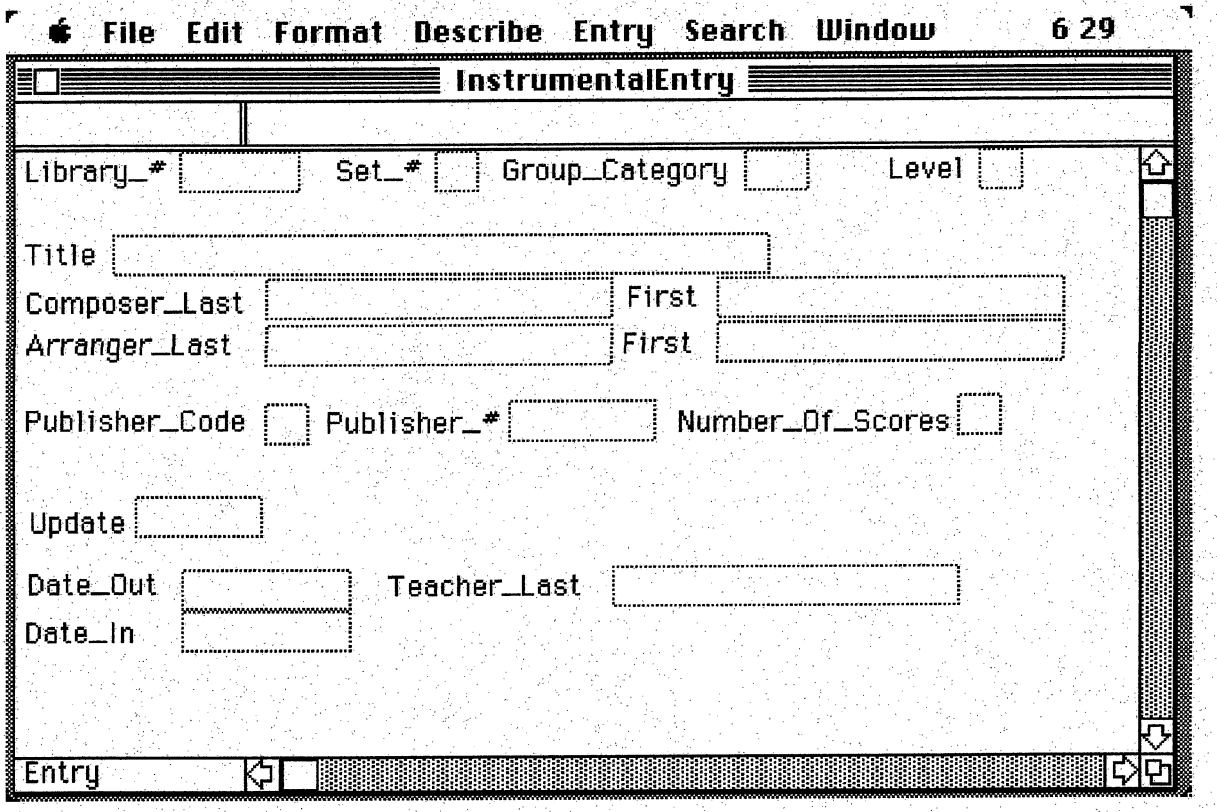

Figure 3. Sample Entry Screen.

As mentioned previously, all users want to quickly find relevant information which is either difficult or impossible with the current system. MusLib can provide the answers. Some typical queries of MusLib might be:

- What music is in the library for an elementary band, level 2, and which of those are on the shelves?
- Which pieces for level 3 string orchestra have 4 scores (necessary for festival performances)?
- What music does each teacher have checked out?
- Is there any music not turned in from last year?
- Are there any arrangements by composer X for a level 3 band?
- Are there any SAT arrangements of chorales by J.S. Bach for a level 3 choir?
- What is the total value of the current instrument inventory?
- How many pianos are at a given school site?

Some typical reports generated from MusLib:

- A master catalog of all the titles in the library.
- A list of all vocal titles sorted alphabetically by level and voicing.
- A list of all instrumental titles sorted by group and level.
- A list of all music checked out to each teacher.
- A master inventory list of all instruments.
- A master list of all pianos within the district sorted by school.

Data Statistics

The sizes in bytes of each field can be found in the data dictionary in Appendix A. To store a record for a piece of instrumental music, 157 bytes are required and vocal music needs 162 bytes. By multiplying 157 bytes times 10,000 instrumental titles, 162 bytes times 10,000 vocal titles and adding the results, the total number of bytes necessary to store the entire music catalog is 3,190,000 or about 3.2 megabytes. By performing similar calculations on the remaining tables, it is found that 3,323,000 bytes or about 3.3 megabytes are needed to store the entire database. Allowing for program overhead, a safe estimate is 4 megabytes.

Table 1 lists each relation, the number of bytes required to store a single record, approximate number of records for each category and totals.

Table 1.
Sizes of data.

Table Name	Size of one record (bytes)	Number of records	Total number of bytes needed to store all records
Instrumental	157	10000	1570000
Vocal	162	10000	1620000
Publisher	113	150	16950
Staff	34	25	850
Instrument Inventory	94	1000	94000
Piano Inventory	106	200	21200
Totals	666	21375	3323000

Proposed Hardware and Software

MusLib is a generic design which can be easily adapted to any DBMS (Data Base Management System) software package. Combined with personal experience with the package and comparisons with **FoxBASE+/Mac by** Fox Software and **4th Dimension** by ACIUS, the recommended DBMS package is **Double Helix 3.0** by Odesta Corp. Favorable reviews in **MacUser**[1] and **Macworld**[2] magazines, along with the manufacturer's on-line support from Odesta and On-Line America (a Mac-specific online service) also influenced this decision. Double Helix is an icon-driven program, making it relatively simple to use for non-programmers. This allows for easy program maintenance even if the original designer is no longer available. See Appendix C for other dbms possibilities.

The optimum installation includes a Macintosh IIci with 8mb of RAM and a full-page display monitor is the preferred computer because of its clock speed (25 MHz) and ease of use. The large amount of memory is needed to run MultiFinder for multi-tasking and multi-users if a second computer is networked. The added memory will also allow the entire database to be loaded into memory for faster performance and data manipulation. The new System 7.0 operating system also requires 2 megabytes of memory to run. The large capacity hard drive (210 meg) will permit the usage of virtual memory with System 7.0. The full-page monitor will let the user view an entire page of data rather a portion of it

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[1]Benjamin, Louis E. and David Swain, "The Data Duelists," MacUser, June 1990, 89.

[2]Hirschberg, Louis E., "Double Helix," MacUser, February 1990, 65.

if a small-screen monitor is used. This will save time by not forcing the user to constantly scroll through every page.

A modem is included to allow users to call the music library from home or their school sites to obtain catalog information. The music librarian can also send and receive files to the office of the music coordinator, which is located at another site, several miles away.

A list of hardware and software for an ideal system is shown in tables 2 and 3 at current school district pricing. This includes the Mac IIci and Mac SE computers for a multi-user system with bar coding, MIDI workstation, page layout, graphics, word processing, spreadsheet, telecommunication, spooling and music software. This installation will allow for the fastest and most efficient performance of the database and other library uses of the computer. The modular design of the IIci and the amount of memory recommended will allow for future expansion of the system as the library grows. Even if the inventory doubles, the system will not become obsolete. Combined cost of hardware and software for this system is $17,927.60.

Tables 4 and 5 show a minimum system. This setup eliminates the MIDI workstation, modem and second computer. Software has been trimmed accordingly. The Mac IIci is replaced with the slower Mac SE/30 (16 MHz). Total cost of this system is $10,105.00. While not as fast as the ideal system, it can provide adequate performance.

Table 2.
Ideal system hardware.

Mac IIci w/ 80 mb hd 4 meg ram	4779.00
Portrait display monitor	769.30
Video card	419.30
Extended Keyboard	160.00
4 meg memory	360.00
MIDI interface	70.00
Apple tape backup system	1100.00
Laserwriter II NT	3100.00
La Cie 210mb hard drive	1399.00
Time Wand Bar Code Reader	975.00
Time Wand Cable	29.00
Local Talk LAN connectors	105.00
Mac SE 20	1223.00
Apple Security System x 2	68.00
Hardware Total	14556.60

Table 3.
Ideal system software.

Double Helix 3.0 - Database	335.00
Time Wand Software	380.00
Retrospect - Backup Software	149.00
Word 4.0 - Word Processor	243.00
Excel 2.2 - Spreadsheet	247.00
PageMaker 4.0 - Page Layout	379.00
SuperPaint 2.0 - Paint/Draw	123.00
Adobe Illustrator - PostScript Art	275.00
Microphone II 3.0 - Telecom	215.00
SuperLaserSpool - Print Spooler	87.00
Finale 2.1 - Music Notation	559.00
Vision 1.3 - MIDI Sequencer	379.00
Software Total	3371.00

Table 4.
Minimum system hardware.

Mac SE/30 w/40 mb hd 1 meg ram	2155.00
Extended Keyboard	160.00
Apple tape backup system	1100.00
Laserwriter II NT	3100.00
La Cie 210mb hard drive	1399.00
Time Wand Bar Code Reader	975.00
Time Wand Cable	29.00
Local Talk LAN connectors	105.00
Apple Security System	34.00
Hardware Total	9057.00

Table 5.
Minimum system software.

Double Helix 3.0 - Database	335.00
Time Wand Software	380.00
Retrospect - Backup Software	149.00
Works 2.0 Integrated software	184.00
Software Total	1048.00

Data Integrity and Security

The music librarian will be responsible for maintaining the data. Daily backups will be maintained while the database is being initially established. Weekly backup to tape will be implemented thereafter. The backup tapes will be stored at another physical location. The librarian will be the only person with a password to allow data entry or modification. End users will be assigned a password to allow browsing or report generation from pre-defined report forms. The programmer will be the only one allowed to enter the database to make any alterations to the design. These passwords will be stored in the office of the music department supervisor.

Summary

The major drawback of MusLib is the cost of installation. However, MusLib can be justified if these benefits and advantages are considered:

- Financial savings through the reduction of lost inventory.
- Saving user time by reducing the number of steps needed to locate appropriate music from five to one.
- Easy user access to important information.
- Reliable and accurate inventory.
- Up-to-date information.
- The ability for each user to generate useful reports.
- Easy querying abilities.
- Added benefits from the ability to use the system for other functions such as word processing, page layout, music notation, composition and arranging.

Even though the financial cost of MusLib may appear to exceed the quantifiable benefits, MusLib can prove itself to be a sound economical choice in the long run because it can improve control over the large amount of information in the music library and increase the effectiveness of its usage. Although not easily measured, MusLib can raise the level of user satisfaction and reduce user frustration. MusLib can solve the problems of inefficiency and inaccuracy which exist in the current system. If fully implemented, MusLib can provide the solution to these problems.

APPENDIX A

Data Dictionary For Database MusLib

MusLib will contain information related to the filing and checking out of music and instruments in the San Bernardino City Unified School District Music Library. It will be maintained by the music librarian but will be available to the music staff to aid in the selection and retrieval of music and instruments for use by their students.

The tables, or relations, are two-dimensional tables which contain single-valued entries. Each entry is placed in fields which are described with their data constraints in the second part of the data dictionary.

TABLES

Table Name: **INSTRUMENTAL**

This table will hold information for instrumental music. Each row will consist of the following fields (key fields are underlined):

	Size of Field (in bytes)	
Library #	7	
Set #	2	
Group Category	2	
Title	30	
Composer Last	20	
Composer First	12	
Arranger Last	20	
Arranger First	20	
Publisher Code	4	
Publisher #	12	
Level	1	
Number of scores	1	
Update	8	
Date Out	8	
Date In	8	
USER	2	
	157	**Total bytes**

Table Name: **VOCAL**

This table will hold information for vocal music. It consists of the following fields (key fields are underlined):

	Size of Field (in bytes)	
Library #	7	
Set #	2	
Style	3	
Title	30	
Composer Last	20	
Composer First	12	
Arranger Last	20	
Arranger First	20	
Publisher Code	4	
Publisher #	12	
Voicing	4	
Level	1	
Number of scores	1	
Update	8	
Date Out	8	
Date In	8	
USER	2	
	162	**Total bytes**

Table Name: **PUBLISHER**
This table holds information about music publishers. It has these fields (keys are underlined):

	Size of Field (in bytes)	
Publisher Code	4	
Publisher Name	30	
Address	40	
City	20	
State	2	
Country	12	
Zip	5	
	113	**Total bytes**

Table Name: **STAFF**
This table contains the names of the music staff :

	Size of Field (in bytes)	
Teacher Last	12	
Teacher First	10	
School	10	
Year	2	
	34	**Total bytes**

Table Name: **INSTRUMENT INVENTORY**
Contains the record of each instrument.

	Size of Field (in bytes)	
District #	15	
Serial #	15	
Instrument Type	15	
Brand	15	
Value	7	
User	2	
Date In	8	
Date Out	8	
Condition	1	
Update	8	
	94	**Total bytes**

Table Name: **PIANO INVENTORY** The record for each piano.	
	Size of Field (in bytes)
District #	15
Serial #	15
Brand	15
Value	7
Last Tuning	8
Cost Of Tuning	6
Location	15
Date In	8
Date Out	8
Condition	1
Update	8
	106 **Total bytes**

FIELD DESCRIPTIONS

• Descriptions for fields in tables **Instrumental** and **Vocal**

KEY: LIBRARY #

Library # - **Text 7**

This key will be used to randomly access any title. Music will be numbered sequentially starting from 1 and left-justified. If the music is vocal, the number will be preceded with a uppercase **V** and a dash (-) i.e. V-1234.

SET #

Set # - **Text 2**

If there are duplicate sets, each set will be numbered sequentially starting with 2 for the first copy.

GROUP CATEGORY

Instrumental Group Category - **Text 2**

Any of the following 2-letter codes:

CO - Concert Band
FO - Full Orchestra
SO - String Orchestra
MB - Marching Band
JB - Jazz Band
CB - Combo

STYLE CATEGORY

General Vocal Style Category - **Text 3**

Either of the following 3-letter codes:

SEC - Secular
SAC - Sacred

VOICING

Voicing of vocal arrangements - **Text 4**

Any combination of **S**, **A**, **T**, **B**. i.e. SSA, SS, SAT, SATB for treble or mixed voices.

UNI - Unison
SOLO - Vocal solo, collection or sheet
MAD - Madrigal
BC - Bass Clef, 2, 3, or 4 part male voices

Key: TITLE

Title - **Text 30**

If a title starts with the words A or The, place them at the end of the title preceded by a comma and a space, i.e.

Lords' Prayer, The
New Wrinkle On Twinkle, A

Key: COMPOSER LAST
Composer, Last Name - **Text 20**
Last name of the composer

COMPOSER FIRST
Composer, First Name - **Text 12**
First name of the composer

Key: ARRANGER LAST
Arranger, Last Name - **Text 20**
Last name of the arranger

ARRANGER FIRST
Arranger, First Name - **Text 12**
First name of the arranger

Key: PUBLISHER CODE
Name of the publisher - **Text 4**
All uppercase using the publisher's codes listed in the SCSBOA and SCSVA Festival Reference Lists. Relates to table **PUBLISHER**.

PUBLISHER #
The publisher's stock number - **Text 12**

LEVEL
Difficulty level - **Integer 1**
One of the following numbers:
1 - elementary
2 - intermediate
3 - junior high
4 - high school
5 - college

SCORES
The number of conductor's scores if more than 1 - **Integer 1**

UPDATE Date of the last entry update - **Date 8** Month, day, year in the following numeric format: mm/dd/yy Use numbers for months, i.e. Jan = 01, Feb = 02, Dec = 12. If a month, day or year is less than 10, use a 0 followed by the number, i.e. 01, 02, 03, 04, etc. Separate month, day and year with a slash (/). i.e. 10/04/88
Key: DATE OUT Date the music was checked out. - **Date 8**
DATE IN Date the music was checked back in - **Date 8**
Key: USER Two-letter code of the teacher using the music. **Text 2** Relates to table **STAFF**.

• Descriptions for fields in table **Staff**

Key: TEACHER LAST Last name of the teacher using the music. - **Text 12**
TEACHER FIRST Teacher's first name. - **Text 10**
SCHOOL Name of the teacher's school. - **Text 10**
YEAR The current school year - **Date 4**

• Descriptions for fields in table **Publisher**

Key: PUBLISHER NAME Name of the publisher - **Text 30**
ADDRESS **Text 40**
CITY **Text 20**
STATE **Text 2**
COUNTRY **Text 12**
ZIP **Text 5**

• Descriptions for the fields in tables **Instrument Inventory** and **Piano Inventory**

Key: DISTRICT # The school district inventory number - **Text 15**
Key: SERIAL # The manufacturer's serial number - **Text 15**
INSTRUMENT TYPE The kind of instrument - **Text 15** i.e. Tenor Saxophone, Bassoon
BRAND The name of the manufacturer - **Text 15**
VALUE The dollar amount that the instrument is worth.- **Integer 7** Enter values as dollar and cents, i.e. 1354.75
CONDITION The condition of the instrument - **Text 1** A one letter code for the current condition of the instrument at the time it is checked out. **N** - New **G** - Good **F** - Fair **P** - Poor **S** - Salvage
LAST TUNING The date of the most recent tuning of the piano. - **Date 8**
COST OF TUNING The price of the most recent tuning - **Integer 6**
LOCATION The school which has the piano - **Text 15**

APPENDIX B

Samples of file cards currently in use in the music library

FORM 1

TITLE CARD

NAME OF COMPOSITION

COMPOSER

PUBLISHER | PUBLISHER'S NO. | CLASSIFICATION

GRADE | PERFORMANCE TIME | LIBRARY NO.

INSTRUMENTATION

.....Full Score	.....2nd Oboe	.....3rd Bb Cornet	.....Baritone T. C.
.....Conductor	.....English Horn	.....4th Bb Cornet	.....Baritone B. C.
.....1st Flute	.....1st Bassoon	.....1st & 2nd Bb Fluegelhorns	.....String Bass
.....2nd Flute	.....2nd Bassoon	.....1st & 2nd Bb Trumpets	.....Basses (Tuba)
.....3rd Flute & Piccolo in C	.....Contra Bassoon	.....1st Horn in Eb	.....Drums
.....Db Piccolo	.....1st Eb Alto Saxophone	.....2nd Horn in Eb	.....Timpani
.....Eb Clarinet	.....2nd Eb Alto Saxophone	.....3rd Horn in Eb	.....1st Violin
.....Solo Bb Clarinet	.....Bb Tenor Saxophone	.....4th Horn in Eb	.....1st Violin A
.....1st Bb Clarinet	.....Eb Baritone Saxophone	.....1st Horn in F	.....1st Violin B
.....2nd Bb Clarinet	.....Bb Bass Saxophone	.....2nd Horn in F	.....1st Violin C
.....3rd Bb Clarinet	.....Soprano Saxophone	.....3rd Horn in F	.....2nd Violin
.....4th Bb Clarinet	.....C Mel. Saxophone	.....4th Horn in F	.....Viola
.....Eb Alto Clarinet	.....Solo Bb Cornet	.....1st Trombone B. C.	.....Cello
.....Bb Bass Clarinet	.....1st Bb Cornet	.....2nd Trombone B. C.	.....String Bass (Orch.)
.....1st Oboe	.....2nd Bb Cornet	.....3rd Trombone B. C.	.....Piano
			.....Harp

KEYNOTE MUSIC SERVICE, INC.

833 SOUTH OLIVE ST. • LOS ANGELES, CALIF. 90014 • MAdison 7-4837

FORM 2

COMPOSER CARD

NAME OF COMPOSITION

COMPOSER

PUBLISHER | PUBLISHER'S NO. | CLASSIFICATION

GRADE | PERFORMANCE TIME | LIBRARY NO.

INSTRUMENTATION

.....Full Score	.....2nd Oboe	.....3rd Bb Cornet	.....Baritone T. C.
.....Conductor	.....English Horn	.....4th Bb Cornet	.....Baritone B. C.
.....1st Flute	.....1st Bassoon	.....1st & 2nd Bb Fluegelhorns	.....String Bass
.....2nd Flute	.....2nd Bassoon	.....1st & 2nd Bb Trumpets	.....Basses (Tuba)
.....3rd Flute & Piccolo in C	.....Contra Bassoon	.....1st Horn in Eb	.....Drums
.....Db Piccolo	.....1st Eb Alto Saxophone	.....2nd Horn in Eb	.....Timpani
.....Eb Clarinet	.....2nd Eb Alto Saxophone	.....3rd Horn in Eb	.....1st Violin
.....Solo Bb Clarinet	.....Bb Tenor Saxophone	.....4th Horn in Eb	.....1st Violin A
.....1st Bb Clarinet	.....Eb Baritone Saxophone	.....1st Horn in F	.....1st Violin B
.....2nd Bb Clarinet	.....Bb Bass Saxophone	.....2nd Horn in F	.....1st Violin C
.....3rd Bb Clarinet	.....Soprano Saxophone	.....3rd Horn in F	.....2nd Violin
.....4th Bb Clarinet	.....C Mel. Saxophone	.....4th Horn in F	.....Viola
.....Eb Alto Clarinet	.....Solo Bb Cornet	.....1st Trombone B. C.	.....Cello
.....Bb Bass Clarinet	.....1st Bb Cornet	.....2nd Trombone B. C.	.....String Bass (Orch.)
.....1st Oboe	.....2nd Bb Cornet	.....3rd Trombone B. C.	.....Piano
			.....Harp

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FORM 4

TITLE CARD

FILE NO. _____ TITLE _____

COMPOSER _____ ARRANGER _____

VOICING _____ CLASSIFICATION _____

CATALOG NO. _____ PUBLISHER _____ QUANTITY _____

DATE USED	COMMENTS

KEYNOTE MUSIC SERVICE, INC.

833 SOUTH OLIVE ST. • LOS ANGELES, CALIF. 90014 • MAdison 7-4837

FORM 5

COMPOSER CARD

FILE NO. _____ TITLE _____

COMPOSER _____ ARRANGER _____

VOICING _____ CLASSIFICATION _____

CATALOG NO. _____ PUBLISHER _____ QUANTITY _____

DATE USED	COMMENTS

KEYNOTE MUSIC SERVICE, INC.

833 SOUTH OLIVE ST. • LOS ANGELES, CALIF. 90014 • MAdison 7-4837

DEPARTMENT OF FINE ARTS
San Bernardino City Unified School District
MUSIC INSTRUMENT CHECK OUT CARD

INSTRUMENT: _____ DISTRICT/SERIAL NO.: _____

INSTRUCTOR	DATE CHECKED OUT	DATE CHECKED IN

IN-18

SAN BERNARDINO CITY UNIFIED SCHOOL DISTRICT
PIANO TUNING AND REPAIR RECORD

Make of Piano _____ School _____

Serial No. _____ Stencil No. _____ Date of Purchase _____

DATE	TUNING AND REPAIRS	AMOUNT

IN-35

FORM 6

CLASSIFICATION CARD

FILE NO. _____ TITLE _____

COMPOSER _____ ARRANGER _____

VOICING _____ CLASSIFICATION _____

CATALOG NO. _____ PUBLISHER _____ QUANTITY _____

DATE USED	COMMENTS

KEYNOTE MUSIC SERVICE, INC.

833 SOUTH OLIVE ST. • LOS ANGELES, CALIF. 90014 • MAdison 7-4837

DATE	ISSUED TO
GAYLORD 40	

APPENDIX C

Other possible DBMS and Bar Code packages

- **4th Dimension**
  ACIUS
  10351 Bubb Road, Cupertino, CA 95014
  (408) 252-4444

- **dBase Mac**
  Ashton-Tate Mac Division
  20101 Hamilton Ave.
  Torrance, CA 90502-1319
  (213) 329-8000

- **FoxBASE+/Mac**
  Fox Software
  134 W. South Boundary
  Perrysburg, OH 43551
  (419) 874-0162

- **Omnis 3 Plus**
  Blyth Software
  2929 Campus Dr.
  San Mateo, CA 94403
  (415) 571-0222

- **Oracle**
  Oracle Corp.
  20 Davis Dr.
  Belmont, CA 94002
  (800) 345-3267

- **Time Wand / Time Wand Manager / Bar Code Labeler / Phrasemaker**
  Videx, Inc.
  1105 NE Circle Blvd.
  Corvallis, OR 97330
  (503) 758-0521

- **Datapen - Model DPA-03 or DPA-04 with Wand**

Datalogic Optic Electronics, Inc
301 Gregson Dr.
Cary, NC 27511
(919) 481-1400

- **Mac-Barcode**

Computer Identics Corp.
5 Shawmut Rd.
Canton, MA 02021
(617) 821-0830

- **Mac Code 3-of-9 Bar Code Printing Program / PC-380 and PC-385 Bar Code Readers**

TPS Electronics
4047 Transport St.
Palo Alto, CA 94303
(415) 856-6833

- **Bar Code Fonts**

Bear Rock
6069 Enterprise Dr.
Diamond Springs, CA 95619
(916) 622-4640

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